International Surgery Journal
Purushothaman R et al. Int Surg J. 2016 Nov;3(4):1875-1878
http://www.ijsurgery.com
pISSN 2349-3305 | eISSN 2349-2902

DOI: http://dx.doi.org/10.18203/2349-2902.isj20163558

Original Research Article

Clinical study of incidence and surgical management of incisional hernia

Purushothaman Rangaswamy*, Shaikh Afzal Rubby, Emmanuel Stephen J.

Department of General Surgery, ESIC Medical College and Hospital, Varatharajapuram, Coimbatore-641015, Tamil Nadu, India

Received: 13 September 2016
Revised: 17 September 2016
Accepted: 06 October 2016

***Correspondence:**
Dr. Purushothaman Rangaswamy,
E-mail: purush.rangaswamy999@gmail.com

ABSTRACT

Background: Incisional hernia a common surgical problem, and uncommon sequel of surgical intervention. It occurs as a result of excessive tension and inadequate healing of previous incision, which is often associated with surgical site infection. We have studied here the etiology and risk factor for the development of incisional hernia. Various clinical presentations, incidence of incisional hernia and different therapeutic modalities of treatment and the post-operative complications. The main aim of the study was to identify the etiological factor to highlight the strategies for prevention of incisional hernias, to find the best management procedures for the incisional hernias.
Methods: The study is a perspective study was conducted in Meenakshi medical college and research institute, Kanchipuram for the period 2010-2012. 87 patients were included for the study. Patients who had herniation at site of previous surgery through the previous surgical scar were chosen for the study. Observations were made with regard to duration and ease of operation, wound complications, mesh infections, hospital stay, morbidity and recurrence.
Results: In our study 83% patients were women may be because of high incidence of caesarean section performed. As LSCS done through the lower midline incision was the commonest cause of incision hernias. The commonest age group was 4th decade that is from 30 - 40 years.
Conclusions: Incisional hernia is more seen in female, housewife who are multiparous, it is mostly presents with swelling and pain abdomen. Previous elective and emergency surgeries in lower midline have higher percentage of incisional hernia.

Keywords: Anatomical repair, Incisional hernias, Surgical site Infections, Intra- abdominal pressure, Mesh

INTRODUCTION

Incisional hernia as a diffuse extrusion of peritoneum and abdominal contents through a weak scar of an operation or accidental wound. Incisional hernia is a common surgical problem, a common sequel of surgical interventions. It is the result of a failure of fascial tissues to heal and close following laparotomy.[1,2] Many factors are associated incisional hernias like age, sex, obesity, chest infections, type of suture materials used and most important wound infections.[3,4] The average intra-abdominal pressure measures about 8ms of water both in the upper and lower abdomen in supine posture. Breathing causes a fluctuation of 2-4 cms of water.

In the erect posture the upper abdominal pressure remains 8 cm water while the lower abdominal pressure increases to 20 cm of water. Coughing, vomiting and straining at

stools elevate the intra-abdominal pressure over 80 cm of the water.[5,6]

The etiological factors usually acquired. The hernia may result from any condition which tends either to weaken the abdominal parities or to increase the intra-abdominal pressure.[7] The pre-disposing factors for incisional hernias or related to the patient, the surgical technique, the suture material, post-operative complications and a few relate to surgeon's decision making and custom of approach to specific disease processes Millikan et al.[5] However many studies suggest that transverse incisions have a lower rate of incisional hernia than midline incisions.[8]

The first symptom of incisional hernias is usually an asymptomatic bulge noticed by the patient. The bulge can be noticed directly over the scar or in an adjacent area locally related to symptoms of incisional hernia include a feeling of heaviness , pain or discomfort in the abdomen , as well as constipation or may present as a cosmetic concern. Symptoms will usually be aggravated by coughing or straining as the hernia contents protrude through the abdominal wall defect.[8,9] During the pre-antibiotic era, the recurrence rate was quite high and cure rate was low. After the advent of good and safe anaesthesia, antibiotics, closed suction drainage, use of prosthetic mesh, transfusion facilities, better understanding of fluid therapy and proper care during preoperative and postoperative period, the cure rate is almost cent percent.[4,6,8,10]

A wide spectrum of surgical techniques have been developed and recommended, ranging from sutured techniques to the use of various types of prosthetic mesh. Primary surgical repair with antibiotic prophylaxis and the development new synthetic materials, the placement of prosthetic mesh for the repair of incisional hernia as gained popularity.[11]

Some principles of abdominal incisions are

- The incision must be minimum, but adequate and give ready access to the part and should also admit extension if required
- The muscles must be split in the direction of fibers rather than cut across
- The incision must not divide any nerves which are supplying the muscles
- The openings made by the cut through the different layers of abdominal wall must be as far as possible and not super imposed
- The drainage tubes should be inserted through separate small incisions as their pressure in the main wound may seriously prejudice the strength of the ultimate scar.[12]

This study found 62% risk of incisional hernia when the study was approximated with absorbable sutures compared with non-absorbable sutures.

Management of incisional hernia comes under two headings preventive and operative. Preventive aspects include proper choice of incision, avoidance of tension on suture line, preservation of nerves and proper closure of the abdominal wounds. Operative management consists of anatomical reconstruction layer by layer, reconstruction of various layers of the abdominal walls, darning technique usage of implants, repair with synthetic non absorbable mesh.[13-16]

METHODS

The study is a perspective study was conducted in Meenakshi medical college and research institute, Kanchipuram for the period 2010-2012. 87 patients were included for the study. Patients who had herniation at site of previous surgery through the previous surgical scar were chosen for the study. Observations were made with regard to duration and ease of operation, wound complications, mesh infections, hospital stay, morbidity and recurrence. All the patients were assessed pre-operatively, intra-operatively and post-operatively, and the findings were recorded in a pre-tested structured questionnaire. Patients were evaluated in terms of age, gender, and body mass index (BMI) mean operation time, length of hospital stay surgical site infections (SSI and recurrence rate).

RESULTS

In our study 83% patients were women may be because of high incidence of caesarean section performed .As LSCS done through the lower midline incision was the commonest cause of incision hernias. The commonest age group was 4th decade that is from 30 - 40 years. In ours study it is observed that emergency surgeries (49) are more likely to lead to incisional hernia than elective surgeries (38).The most recognizable association with incisional hernia was found to be post-operative wound infection.22 out of 87 patients were obese. The most common time of onset of hernia in our study is less than 6 six months (32 patients). 6-12 months (43 patients).The methods of repair done anatomical repair 24 cases, mesh repair 63 cases. Out of 87 cases operated 18 cases had minor complications like seroma.

Table 1: Associated risk factors.

Risk factors	Number of cases	Percentage
Anaemia	45	90
Cough/COPD	24	48
Straining micturition/stools	18	30
Anaemia		Hg%
Mild anaemia	23	10.0-11.9 gm/dl
Moderate anaemia	22	7.0-9.9 g/dl
Severe anaemia	0	Less than 7 g/dl

Table 2: Nature of surgery.

Nature of surgery	Number of cases	Percentage
Emergency	49	57
Elective	38	43
Total	87	100
Incisions		
Lower midline	70	80
Upper midline	10	11.5
McBurney's	7	8.5
Total	87	100
Procedure		
Appendectomy	7	8
Hysterectomy		
LSCS	60	65
Tubectomy		
Laparotomy	20	27
Total	87	100

DISCUSSION

The incidence of incisional hernia was common in 4th and 5th decades .It is more common in females. Abdominal swelling was the commonest presenting complaint. Abdominal pain and vomiting were other complaints. Incisional hernia in female was more common in multiparous women. Anaemia, respiratory tract infection (RTI), diabetes and hypertension were associated diseases with incisional hernia. 38 of incisional hernias developed following elective surgery. 49 cases of incisional hernia following emergency surgeries. Infection in post-operative period did seem to be the commonest predisposing factor for weakening of the scar.[1,4,17,18] Diagnosis of incisional hernia was possible in all cases by clinical examination alone without resorting to any special investigations.[10] Incisional hernias treated by mesh repair method. Recent trend is to use the prosthetic mesh judiciously. Mesh repair was found to be significantly better for large defects and multiple defects.[14-16,19] There was no mortality in our study. None of the cases showed recurrence. There was no recurrence in our study though the period of follow up was not adequate to make correct assessment of recurrence. In a short follow up it is difficult to comment on recurrence. However the short term results indicate a significant improvement in the repair of incisional hernia by the use of prosthetic mesh compared with conventional repairs.[13]

Proper pre-operative preparation of the patient with high risk is an important factor in preventing recurrence of incisional hernia. Care is therefore required in optimally timing the surgery, minimizing the predisposing factors and also in choice of surgery for repair. The use of midline incision should be restricted to operations in which unlimited access to the abdominal cavity is necessary. Meticulous aseptic technique and careful closure of the abdominal wound is necessary to prevent incisional hernia.[16,18,20]

CONCLUSION

Incisional hernia is more seen in female, housewife who are multiparous, it is mostly presents with swelling and pain abdomen. Previous elective and emergency surgeries in lower midline have higher percentage of incisional hernia. Post-operative wound infection, seroma formation, associated anaemia and respiratory tract infection are the risk factor for incisional hernia. Proper pre-operative preparation, choice of surgery for repair, aseptic technique, and careful closure of the abdominal wound decreases the incidence of incisional hernia. The use of synthetic prosthetic material provides the tension free repair and rate of recurrence. Good pre and post-operative antibiotics and wound care is essential mesh repair is the almost the gold standard for the incisional hernias. But we should not forget that incisional hernia is a preventable surgical complication.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the institutional ethics committee

REFERENCES

1. Werner S, Grose R. Inflammation: historical perspectives. In: inflammation: Basic Principles and Clinical Correlates, edited by Gallin JI, (New York: Raven Press) 5; 2003.
2. White TI, Santos MC, Thompson IS. Regulation of wound healing by growth factors and cytokines. Physical Review 83; 1998:53l-545.
3. Cross KJ, Mustoe TA. The anatomy of anterior abdominal wall, 2 editions, London, Edinburgh Churchill Livingstone; 2003:168-72.
4. De Vries Reilingh TS, Van Geldere D and Langenhorst B. Growth factors in wound healing. Surgical Clinics of North America. 2004;83:53l-45.
5. Chart R, Chart V and Eisenstat M. The neutrophil NADPH oxidase. Archives of Biochemistry and Biophysics. 2000:397 342.
6. Cichetti G, Allen PG, Glogauer M. A case control study of incisional hernia repair. Surgical Endoscopy. 2002;14:117-9.
7. Meyers M. Studies on inflammation: the effect on histamine and serotonin non vascular permeability: an electron microscopic study. J Biophy Biochem Cytol. 1994;11:571.
8. Butler P, Mitchell A, Ellis H. The anterior abdominal wall and peritoneum. In: applied radiological anatomy, edited by Cambridge University Press. 2003;189-200.
9. Tracey KJ. Illustrated review of diagnosis of abdominal wall hernias. British J Surg. 2002;86:1243-9.
10. Coakley FV, Hricak H. Chemotactic signalling pathways in neutrophils: from receptor to actin assembly. Critical Reviews Oral Bio Medi. 1999;13:220.

11. Majno G, Palade GE. A comparison of suture repair with mesh repair for incisional hernia. The New England J Med. 1961;343:392-8.
12. Stoppa RE. Seperation of anatomic components technique for the reconstruction of massive midline wall defects, Anatomy, Surgical techniques, Applications and Limitations revisited. Plast Reconstr Surg. 1989;105:731-8.
13. Anthony T, Bergen PC, Kim LT. Factors affecting recurrence following incisional herniorrhaphy. World J Surg. 2004;24:95-100.
14. Healy JC Reznekh. Repair of large midline incisional hernias with poly-propylene mesh: Comparison of three operative techniques. Hernia. 1999;8:56-9.
15. Sandblom G, Gruber Schluper I, Prescher A. Closure of the abdominal midline fascia: meta-analysis delineates the optimal technique. American Surgeon. 2000;67:421-6.
16. Combined fascia and mesh closure of large incisional hernias. J Royal College Surg Edinburgh. 2000;43:29-30.
17. Leber Garb JL, Alexander AI. Wound remodelling and scarring. J Wound Care. 1998;11:296.
18. Whitley MS, Ray-Chaudhuri SB, Galland RB. Factors affecting wound complications in repair of Incisional hernias. American Surg. 1998;64:276-80.
19. Massive incisional hernia: abdominal wall replacement with marlexmesh. British J Surg. 2000;78:242-4.
20. Tapper H. The treatment of complicated incisional hernias. World J Surg. 1996;13:545.

Cite this article as: Purushothaman R, Rubby SA, Emmanuel Stephen J. Clinical study of incidence and surgical management of incisional hernia. Int Surg J 2016;3:1875-8.